

REMARKS:

Claims 1 and 4-22 are pending, of which claim 11 has been allowed.

Claim 22 has been cancelled on the advice of the Examiner as being substantially a duplicate of claim 10.

35 U.S.C §103(a)

Claims 1, 4-10, and 12-22 stand Finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann et al. (1998, *Environmental Technology* 19:761-773; "Hofmann") in view of Hutchings, U.S. Patent Number 4,880,556.

Applicant has carefully considered the Examiner's reasons for rejection, but believes that a *prima facie* case of obviousness under 35 U.S.C §103(a) has not been presented. Applicant believes that no *prima facie* case of obviousness has been shown, and the arguments below will stand in consideration on appeal.

The Hofmann reference, in view of Hutchings fails to present a *prima facie* case of obviousness for the following reasons:

- 1) The Hofmann reference fails to teach or suggest all of Applicant's claim limitations – in particular a borate buffer and a masking agent.
- 2) The Hofmann reference teaches away from Applicants claims – by teaching an ammonium chloride/ammonia buffer system.
- 3) The Hutchings reference is non-analogous art.
- 4) The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.
- 5) The Hutchings reference fails to teach or suggest all of Applicant's claim limitations – in particular an aqueous solution having  $1 \times 10^{-6}$  to  $1 \times 10^{-3}$  mol/liter of an azo dye. Rather it teaches away from Applicant's claimed concentration.
- 6) The proposed modification changes the principle of operation of a reference.

Detailed description of the above arguments:

1. The Hofmann reference fails to teach or suggest all of Applicant's claim limitations – in particular a borate buffer and a masking agent. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP 2143.03. The Examiner has agreed that "Hofmann does not teach the presence of a borate buffer", (Office Action of 2/24/2004, page 3). The Hofmann reference describes a method for the spectrophotometric measurement of chlorine in drinking water using amaranth in a solution buffered by ammonia. There is no teaching or suggestion of any other buffering systems, such as the Applicant's required borate buffer, NOR of the metal-chelating agents claimed by Applicant.

2. The Hofmann reference teaches away from Applicants claims – by teaching an ammonium chloride/ammonia buffer system. "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." MPEP 2141.02. The Hofmann reference teaches away from a borate buffer by specifically teaching an "ammonia-buffered" solution that is effective in the method described in the reference. (page 762, column 2, line 9 – to which the amaranth solution is identical). One of skill in the art would have no motivation to add an additional borate buffer when the system is already described as properly buffered. Applicant claims the use of a masking agent – which preferably is aqueous ammonia – in addition to the borate buffer.

Nor would one of skill in the art be motivated to arrive at Applicant's claims from the Hofmann reference by routine experimentation, since the need for a borate buffer is not recognized as a result-effective variable. The Hofmann solution is already buffered by ammonia and there is no suggestion that any additional buffer would be useful, let alone a borate buffer. Finally, both the Hofmann and Knechtel references already teach buffer systems (ammonia or an ammonium chloride/ammonia solution) There is no motivation to seek a different buffer system, whether from within the art, or outside the art.

3. The Hutchings reference is non analogous art. "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in

the references themselves or in the knowledge generally available to one of ordinary skill in the art." MPEP 2143.01. Hutching discloses an aqueous cleaner containing alkali metal halogenates, a stabilized colorant and a stabilizer – such as borate. The use is for household and janitorial cleaning chores – which has nothing to do with a composition or method for determining a chlorine dioxide concentration in a water sample.

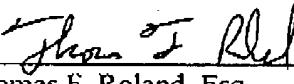
4. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no suggestion in either of the two cited pieces of prior art that these references in different art area, solving different problems that the references can or should be combined.
5. The Hutchings reference fails to teach or suggest all of Applicant's claim limitations – in particular an aqueous solution having  $1 \times 10^{-6}$  to  $1 \times 10^{-3}$  mol/liter of an azo dye. Further, the Hutchings reference teaches away from the limitations of Applicant's claims by teaching only concentrations outside of Applicant's claim limitations. In column 3, lines 35-42 of the Hutchings reference it states "Accordingly, the compositions of the present invention are aqueous, alkaline cleaning compositions comprising on a weight basis ... from 0.1 % to about 3% on an active basis of a stabilizable colorant ...". The Examples given in the patent show compositions having from 0.5 to 1% by weight of colorant. For amaranth, a 0.1 wt% solution =  $1.6 \times 10^{-3}$  mole/L, which is much higher than the range claimed by Applicant. The rest of the concentrations of Hutchings, and the Examples are even farther outside the concentration ranges of the colorant of colorant (azo dye). Thus the Hutchings reference, which is already non-analogous art, teaches only colorant ranges outside of Applicant's claimed limitations – failing to teach or suggest Applicant's claim limitations, and teaching away from those limitations. One in the art would not be motivated by this reference to practice Applicant's claimed invention.
6. The proposed modification changes the principle of operation of a reference. "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." MPEP 2143.01. The object of the Hutchings reference is

to prevent a change in color of a colorant, while the Hofmann reference requires that the solution change in coloration to serve as an indicator. One in the art of spectrometric indicator solutions would not seek to hinder the change in coloration of the dye.

Additionally, the Hutchings reference deals with solutions at a pH of 9.0 to 10.5, while the Hofmann method occurs at a pH of 8 to 9. Since a buffer chosen is directly related to the pH of the solution at issue, one would not be motivated to use a buffer described at an ion concentration which differs by a factor of 10.

In view of the above, the Applicant believes that no *prima facie* case has been presented, and that the reasons for rejection have been overcome. The claims herein, as amended, should be allowable to the Applicant. Accordingly, reconsideration and allowance are requested.

Respectfully submitted;

  
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